CHAPTER TEN: IMPLEMENTATION

10.1 INTRODUCTION

This chapter describes the process the Arizona Department of Water Resources (ADWR) will follow when implementing, determining compliance with, and enforcing the Fourth Management Plan (4MP) requirements for the Pinal Active Management Area (PAMA). These plan elements will be carried out in accordance with ADWR's overall regulatory approach, which is described in Appendix 10A. The following topics are discussed in the order listed:

- Notice of Conservation Requirements and Compliance Dates
- Variance and Administrative Review Process
- Plan Modification Procedures
- Groundwater Use Reporting Requirements
- Monitoring and Audit Procedures
- Compliance Approach

10.2 NOTICE OF CONSERVATION REQUIREMENTS AND COMPLIANCE DATES

Within 30 days of adoption of the PAMA 4MP, ADWR will mail written notice of the irrigation water duties and conservation requirements established in the plan to the persons required to comply with the requirements. A.R.S. § 45-567(C). A person who receives notice of an irrigation water duty or conservation requirement established in the 4MP must begin complying with the requirement by the date specified in the notice, unless the person applies for and is granted a variance from or an administrative review adjustment to the requirement, as explained in section 10.3 (A.R.S. § 45-567(D)). A person who receives such a notice, must continue complying with the requirement until the effective date of any substitute irrigation water duty or conservation requirement established in the Fifth Management Plan (5MP). If a person receives notice of a 4MP irrigation water duty or conservation requirement that replaces an irrigation water duty or conservation requirement established for the person in the Third Management Plan (3MP), the person must continue complying with the 3MP irrigation water duty or conservation requirement until the effective date of the 4MP requirement.

The Director may give written notice of a conservation requirement at any time to a person with a right or permit to withdraw, distribute, or use groundwater that was not in existence when the management plan was adopted. The person given written notice must comply with the conservation requirement not later than the compliance date specified in the notice, unless the person applies for and is granted a variance (A.R.S. § 45-571.01(B) and (D)).

10.3 VARIANCE AND ADMINISTRATIVE REVIEW PROCESS

Upon receipt of a notice of a 4MP irrigation water duty or conservation requirement, a person may apply for a variance from or seek administrative review of the water duty or conservation requirement. In general, a variance gives a person additional time (not to exceed five years) to comply with an irrigation water duty or conservation requirement, while an administrative review takes place. The administrative review can

result in an adjustment to the requirement for that management period. Each of these processes is described below.

10.3.1 Variance

If a person requires additional time to comply with a new irrigation water duty or conservation requirement, the person may apply for a variance. An application for a variance must be filed within 90 days of the receipt of the notice of the irrigation water duty or conservation requirement (A.R.S. § 45-574(A)). The Director may grant a variance for up to five years upon a showing that "compelling economic circumstances" will prevent the person from complying with the new irrigation water duty or conservation requirement by the compliance date specified in the notice. A person granted a variance must continue complying with any existing irrigation water duty or conservation requirement during the variance period, unless the Director establishes a schedule of intermediate water duties or conservation requirements to be reached at specified intervals during the variance period (A.R.S. § 45-574(C)).

10.3.2 Administrative Review

If a person believes that an error or omission was made in calculating the person's irrigation water duty or conservation requirement, or that the person's irrigation water duty or conservation requirement is unreasonable because of circumstances unique to the person, the person may request an administrative review of the irrigation water duty or conservation requirement. If granted, an administrative review can result in a permanent adjustment to the irrigation water duty or conservation requirement. An application for administrative review must be filed within 90 days of the date of the notice of the irrigation water duty or conservation requirement if the application is based on circumstances in existence as of the date of the notice (A.R.S. § 45-575(A)).

At any time while a 4MP irrigation water duty or conservation requirement is in effect, the person required to comply with the water duty or conservation requirement may seek administrative review of the person's irrigation water duty or conservation requirement based on a claim that "extraordinary circumstances not in existence as of the date of notice that was given 30 days after adoption of the management plan" justify an adjustment to the irrigation water duty or conservation requirement. The Director may adjust the irrigation water duty or conservation requirement based on clear and convincing evidence that extraordinary circumstances not in existence as of the date of notice make it unreasonable to require compliance with the irrigation water duty or conservation requirement (A.R.S. § 45-575(B)).

In determining whether extraordinary circumstances make it unreasonable to comply with an irrigation water duty or conservation requirement, the Director will consider, among other things, whether conditions that came into existence after the date of notice are significantly different from those conditions in effect at the date of notice.

Examples of extraordinary circumstances may include the following situations: changes in water quality that necessitate altering water application rates for irrigation grandfathered rights or turf related facilities; changes in technology or economics that are significantly different from ADWR's projections or assumptions; and changes in federal, state, and local laws and regulations that prevent compliance with irrigation water duties or conservation requirements.

10.4 PLAN MODIFICATION PROCEDURES

At any time after the 4MP is adopted, the plan may be modified pursuant to the same public hearing and comment procedures required for adoption of the plan (A.R.S. § 45-572(A)). The Director may modify an

irrigation water duty or conservation requirement established in the plan "only if the Director determines that extraordinary circumstances, errors, or mistakes justify the modification" (A.R.S. § 45-572(A)).

Within 30 days of a modification of an irrigation water duty or conservation requirement, ADWR must give written notice of the modification to the person required to comply with the modified requirement (A.R.S. § 45-572(B)). The person may request a variance from or an administrative review of the modified irrigation water duty or conservation requirement within 90 days of the date of the notice (A.R.S. § 45-572(B) and (C)).

10.5 GROUNDWATER USE REPORTING REQUIREMENTS

The Groundwater Code (Code) contains a number of provisions that enable ADWR to acquire needed information on water use. This information is used to evaluate compliance with the Code and ADWR rules, permits, and management plans. The water use monitoring and reporting requirements, which are summarized below, are also designed to give water users the data needed to assess their progress in attaining conservation requirements. Over the last decade ADWR has shifted to a more interactive, web-based reporting format. Beginning in 2009, ADWR discontinued mailing hard copy Annual Water Withdrawal & Use Report forms to right holders. Instead, each year, right holders are sent a one-page letter in January, reminding them of the requirement to report by March 31st. While the hard copy of the annual report is still available, water users are encouraged to report online. Holders of several types of water rights and authorities may now file their reports using ADWR's Online Annual Reporting Tool (eAR). During the fourth management period, ADWR intends to increase the number of water rights and authorities for which an annual report may be filed using the eAR tool.

ADWR has also devoted significant efforts towards increasing the availability of public records from the ADWR website, including well queries, pumpage queries, imaged records, and interactive mapping tools. All of these are designed to not only answer public questions, but allow water users access to their own information filed with ADWR to help them better manage their own water portfolio and comply with ADWR requirements.

10.5.1 Water Measurement

The Code requires persons withdrawing groundwater from non-exempt wells in Active Management Areas (AMAs) to measure withdrawals using a water measuring device approved by the Director (A.R.S. § 45-604). However, some small irrigation and non-irrigation users are exempt from the measuring device requirements. ADWR has adopted rules requiring the use of an approved device, or a combination of devices and methods, for measuring rates and volumes of groundwater withdrawals for the calculation of the total annual volume of groundwater withdrawn (A.A.C. R12-15-901, *et seq*). Persons subject to the measuring device requirements must maintain the accuracy of the device within specific standards.

10.5.2 Records and Annual Reports

The Code requires most persons who own or lease a right or permit to withdraw, receive, or use groundwater to file an Annual Water Withdrawal and Use Report with the Director for each right or permit they hold. All persons required to file annual reports must maintain current and accurate records of water withdrawn, delivered, received, and used (A.R.S. § 45-632).

Persons withdrawing groundwater from exempt wells and most non-irrigation customers of cities, towns, private water companies, and irrigation districts are exempt from record keeping and reporting requirements. Persons receiving water pursuant to a grandfathered right or a groundwater withdrawal permit

and persons assigned and noticed of individual user requirements must meet the record keeping and reporting requirements, although certain small right holders are exempted from those provisions.

10.6 MONITORING AND AUDIT PROCEDURES

ADWR has the authority to determine compliance with the Code, management plan, and rule requirements. This authority is described below.

10.6.1 Measuring Devices

ADWR monitors compliance with the measuring device requirements through review of Annual Water Withdrawal and Use Reports, field investigations, and evaluations of energy use. Before field visits, ADWR generally contacts well owners to ask for their cooperation and presence during the inspection. Standardized procedures and equipment are used to test the accuracy of measuring devices (A.A.C. R12-15-901, *et seq.*).

10.6.2 Irrigation Acreage and Water Use Monitoring

ADWR monitors irrigated acreage and irrigation water use in the PAMA using annual reports, crop records, energy use records, aerial photography, and satellite-based remote sensing data. These procedures are also used to determine the accuracy of annual water use reports and to detect illegal irrigation. ADWR investigates any potential discrepancies or violations identified using these methods.

10.6.3 Annual Report Reviews and Audits

ADWR reviews all annual water withdrawal and use reports. This is ADWR's primary means for determining compliance with conservation requirements, measuring requirements, and groundwater use limitations.

ADWR conducts official audits of annual reports to check the accuracy of the reports and to verify suspected problems. An audit is a detailed review by ADWR staff of a person's water use records. Each person audited is requested to attend the audit. Audits ensure overall compliance with the Code and the management plan for the PAMA.

10.6.4 Inspections

The Code allows ADWR to enter property where wells or other facilities that are used for the withdrawal, transportation or use of groundwater are located. This authority allows ADWR to inspect facilities and lands subject to Code provisions and obtain data or access to records relating to the withdrawal, use, or transportation of groundwater (A.R.S. § 45-633).

ADWR is generally required to give persons reasonable notice of inspections unless entry is sought solely to inspect a measuring device. Notice is not required in the rare cases in which there is reason to believe that notice would impede enforcement efforts.

10.7 COMPLIANCE APPROACH

ADWR has developed a compliance program approach that includes education, assistance, and flexibility.

10.7.1 Education and Assistance

ADWR informs water users of their conservation and reporting requirements as described in section 10.2 of this chapter. ADWR also educates water users by explaining how the requirements were derived and how the user can achieve those requirements. This is done through advisory committees, detailed program descriptions contained in reports and issue papers, public presentations, the publication of this management plan, and individual meetings with interested users.

Annual flexibility account balance information is available to all affected users allowing them to monitor their compliance status. Irrigation grandfathered right holders who have exceeded the debit limits of their flexibility accounts, or who are close to exceeding them are notified of their status and given the opportunity to reduce water usage or purchase flex credits to avoid an enforcement action. However, irrigation grandfathered right holders regulated under the Historic Cropping Program may not purchase flex credits.

10.7.2 Determination of Compliance

The mandatory conservation programs in the 4MP are designed to achieve reductions in groundwater withdrawals and use. Consequently, the persons given notice of irrigation water duties and conservation requirements established in the plan are required to comply with those irrigation water duties and conservation requirements only in those years in which they withdraw, distribute, or receive groundwater. The following two sections describe how ADWR determines compliance with conservation requirements when groundwater is used.

10.7.2.1 Maximum Annual Water Allotments and Gallons Per Capita per Day Requirements

The 4MP establishes maximum annual water allotments for irrigation grandfathered rights, turf-related facilities, dairies, and cattle feedlots. Municipal providers regulated under the Total Gallons Per Capita per Day (GPCD) Program are required to comply with GPCD requirements. The requirements are similar to maximum annual water allotments in that they limit the amount of water that may be used during a year to a specified amount. A person's compliance with a maximum annual water allotment or GPCD requirement is generally determined by comparing the total amount of water used by the person during the year with the amount of water allowed by the allotment or GPCD requirement. However, the use of water in excess of the allotment or GPCD requirement during a year does not necessarily mean that the person is out of compliance for the year. To account for weather variations and other factors that may result in the use of more water in some years than others, ADWR determines compliance either through the operation of a flexibility account or through a three-year averaging method, depending on the type of use.

Flexibility accounts are used to determine compliance for municipal providers who are subject to GPCD requirements, turf-related facilities, and irrigation grandfathered rights. The total water use reported by the user for the year is compared with the amount of water the user was entitled to use during the year. Generally, if the total amount of water used during the year is less than the allotment for the year, the flexibility account is credited with the difference. If the water use exceeds the allotment, the flexibility account is debited with the difference. A user is out of compliance with its allotment or GPCD requirement in any year in which its flexibility account is debited with an amount of water that causes the account balance to exceed the maximum negative balance allowed for the use. The maximum positive account balances and the maximum negative account balances for each type of use can be found in chapters 4, 5, and 6.

For dairies and cattle feedlots subject to maximum annual water allotments, compliance is determined through a three-year averaging method. Under this method, the user will be in compliance with its allotment

for any year in which its water use exceeds its allotment if the total amount of water used during that year and the previous two years does not exceed the sum of allotments for those three years.

If an irrigation grandfathered right, turf-related facility, or municipal provider uses water during a year in an amount which causes its flexibility account to exceed its maximum negative account balance, or if a dairy or cattle feedlot uses water during a three-year period in an amount that exceeds the sum of the allotments for those three years, a violation occurs, but only to the extent of the groundwater included in excess. ADWR determines the amount of groundwater in the excess by a process known as "stacking." This process was approved by the court in *Arizona Municipal Water Users Ass'n v. Arizona Dep't of Water Resources*, 181 Ariz. 136, 888 P.2d 1323 (App. 1994). Note, the Groundwater Code authorizes ADWR to count recovered effluent in determining municipal compliance with groundwater GPCD and the groundwater conservation requirements for municipal water distribution systems (See also *Ariz. Water Co., v. Ariz. Dep't of Water Resources*, 208 Ariz. 147, 91 P.3d 990 (2004)). ADWR may, under its "stacking" method, consider use of the CAP water in determining GPCD compliance.

Under the stacking process, water from all sources used by a person during a year, with certain exceptions, is counted when comparing the person's water use to the maximum annual water allotment or GPCD requirement. However, groundwater is counted last. The process of counting groundwater last is called stacking because the groundwater is added to, or stacked on top of, the non-groundwater sources. Because groundwater use is counted last, the amount of any water used by a person in excess of its allotment or GPCD requirement will be comprised, at least partially, of groundwater. Groundwater withdrawn pursuant to an approved remedial action project under CERCLA or title 49 is counted as surface water when certain conditions are met.

10.7.2.2 Specific Conservation Measures

Municipal providers regulated under the Modified Non-Per Capita Conservation Program and irrigation grandfathered right holders regulated under the Agricultural Best Management Practices (BMP) Program are required to comply with specific conservation measures instead of GPCD requirements or maximum annual groundwater allotments. The following industrial users are required to comply with conservation measures specific to their type of use instead of maximum annual water allotments: dairies regulated under the Dairy BMP Program, sand and gravel facilities, mines, large-scale power plants, large-scale cooling facilities, and new large landscape users. For these municipal providers and industrial users, compliance will be determined by ascertaining whether they implemented their specific conservation measures in the manner required by the management plan, rather than by comparing their water use to a volumetric allotment. They are out of compliance if they fail to implement the conservation measures in the required manner.

All industrial users, including those subject to maximum annual water allotments, are required to comply with the conservation measures established for All Industrial Users in section 6-602 of Chapter 6. These conservation requirements include general requirements to avoid waste and make efforts to recycle water. They also include more specific requirements relating to low water use landscaping, landscaping and water features in publicly-owned rights of way, and single pass heating and cooling. In addition to these requirements, section 6-2502 of Chapter 6 requires that all new large industrial users submit a water conservation plan to the Director.

10.7.3 The Enforcement Process

When ADWR's monitoring program identifies a potential violation or when a third party complaint is received about the activities of another user, an investigation is conducted to obtain the facts.

An investigation may involve a field inspection by ADWR staff or an audit at ADWR's office after notice to the potential violator. ADWR may request that the individual produce relevant records for the inspection or audit. Based on the investigation, ADWR will determine whether there has been a violation and, if so, what course of action to take.

Where the violation is minor and does not require corrective action, ADWR may bring the compliance action to a close with an advisory letter upon discontinuance of the violation. For more serious violations where there is reason to believe a person is violating or has violated a statute, permit, rule, or management plan provision, enforcement action will be taken by ADWR.

During the first and second management periods, ADWR took a nontraditional approach to enforcement. Given the recent enactment of the Code and adoption of the management plans, a high level of tolerance was employed. Fines were set at low levels and probationary provisions and advisory notices were widely used. In many instances, for unintentional violations of management plan requirements such as GPCD limits and maximum turf or irrigation grandfathered right allotments, ADWR deferred any monetary penalties. Instead, it allowed the violator to develop or expand conservation measures designed to help the violator reduce water use. ADWR felt that the long-term benefits of a properly designed and implemented conservation program, tightly structured and closely monitored, would exceed the benefits of a traditional monetary penalty program.

In each instance of a management plan violation, the violator was given the following options:

- Contest the enforcement action by requesting a hearing,
- Pay a predetermined monetary penalty, generally based on the amount of groundwater used in excess of the requirement, or
- Negotiate a mitigation program with ADWR designed to develop or expand conservation programs intended to assist the violator in achieving future compliance.

The results of this enforcement strategy have been mixed. Some mitigation programs developed under this approach have been successful in increasing water use efficiency, while others have been less effective. In most cases, significant and sometimes disproportionate amounts of time and resources have been invested by both the violators and ADWR.

The 4MP approach to enforcement will exercise flexibility on a more limited scale. The arguments of "newness and complexity" will be less compelling in this management period. Previous violations will be considered in determining the appropriate compliance approach. In addition, ADWR may consider new compliance approaches during the management period for Code and management plan violations. One possible provision would employ a groundwater replenishment option. This may involve storage of renewable water designated as non-recoverable, as defined by A.R.S. § 45-833.01, in a volume that would adequately compensate for the violation. A related approach may allow the purchase and extinguishment of long-term storage credits to offset a violation. The result of these approaches is a penalty that results in a positive water resource activity. If a water user anticipates a violation and informs ADWR of this expectation before receiving a notice of noncompliance, the Director may consider this voluntary disclosure to be a mitigating factor in determining the appropriate enforcement action.

Additional enforcement mechanisms are generally reserved for violators not amenable to the previously mentioned mechanisms. They include contested hearings, cease and desist orders, and civil penalties of up

to $10,000 per day for violations directly related to illegal withdrawals, transportation, or use of groundwater (A.R.S. §§ 45-634 and 45-635).

Extremely serious cases may also be referred for criminal prosecution if persons knowingly violate or refuse to comply with the Code; or with a permit, rules, or order issued or adopted under the Code (A.R.S. § 45-636).

APPENDIX 10A
FOURTH MANAGEMENT PLAN REGULATORY APPROACH

ADWR's regulatory philosophy is based on its overall water management goals for the management plans: the conservation of groundwater through the efficient use of all water sources and the augmentation of water supplies to ensure a long-term, secure water supply. ADWR's regulatory programs are designed to be consistent with that regulatory philosophy.

The AMA water management goals and the overall mission statement of ADWR are guiding concepts in the agency's activities. An understanding of the basic framework of the regulatory programs requires knowledge of the components of the AMA goals and ADWR's compliance approach. The framework is described below.

The PAMA Management Goal
The PAMA goal is defined by A.R.S. § 45-562 as:

> "…allow development of non-irrigation uses … and to preserve existing agricultural economies … for as long as feasible, consistent with the necessity to preserve agricultural economies in the active management area for as long as feasible, consistent the necessity to preserve future water supplies for non-irrigation uses."

The statute includes both existing uses and future uses. Thus, the hydrologic conditions in the PAMA cannot simply be viewed in the short-term, but rather must be viewed over a longer period of time. To help analyze current uses and their impact on the PAMA's water supplies, ADWR uses a water budget approach that is more complicated than comparing the total amount of groundwater withdrawals in the PAMA to the amount of recharge occurring in the area in a given year.

In analyzing water demands and supplies in an Active Management Area (AMA), ADWR considers the following factors which impact groundwater levels and water in storage:

1. Groundwater pumpage: Annual pumpage volumes from the PAMA's aquifers are considered in the water balance calculation. Withdrawals associated with irrigation grandfathered rights, non-irrigation grandfathered rights, groundwater withdrawal permits, and municipal providers are calculated as debits to the groundwater system.

    a) *Committed demand*, pursuant to A.A.C. R12-15-716, is an important component in the determination of the physical availability of a water supply for an application for an Assured Water Supply (AWS), but it is not included in the annual overdraft calculation. Committed demand is associated with platted, undeveloped lots which will be served in the future. In the AWS demonstration process, all demands, including the committed demand, must be determined to be physically available. In the context of an application for a Designation of AWS (DAWS), the applicant must demonstrate the physical availability of a water supply for a 100-year period which includes sufficient water to serve current, committed, and projected demand. Outside of the DAWS process, committed demand is associated with unbuilt subdivisions for which a Certificate of AWS (CAWS) exists. This committed groundwater demand must be counted as already having been "allocated" when determining physical availability in proving an AWS. To do otherwise would allow groundwater to be allocated multiple times to multiple developments, resulting in an underestimation of the long-term demands on the AMA's aquifers.

b) Note that the water budget calculation considers as a debit to the system the volume of municipal groundwater pumping, the *groundwater allowance*, that is allowed through the AWS Program for each DAWS and CAWS issued prior to 2025. ADWR concluded in the development of the AWS Rules that a limited quantity of the groundwater in storage could be allocated as a portion of the allowable water supply for each applicant. This groundwater can be used at any time in the 100-year period by the entity to whom it was assigned and the entity or water provider is not required to replenish this volume; however, it does count as groundwater pumping in the calculation of overdraft. It was expected that this allowance would be used soon after a provider is designated while other supplies were being developed; however, many providers have chosen to hold onto their groundwater allowance in anticipation of years when renewable supplies are short and additional groundwater will need to be withdrawn to meet demand.

   The AWS Rules require the applicant to prove consistency with the management goal of the AMA in addition to proving the physical availability of the water supply. This requires that most of the groundwater used by a new subdivision, or in the service area of a DAWS provider, is replenished. Alternatively, renewable water stored underground can be recovered, and is counted as the type of water that was stored, and not as groundwater. However, the AWS Rules allow a small volume of groundwater to be used by a CAWS or DAWS applicant. This groundwater allowance is set at the time the AWS (the DAWS or CAWS) is issued, but can be added to by extinguishing grandfathered groundwater rights until the year 2025. In addition, DAWS providers receive an incidental recharge factor addition to their groundwater allowance each year, based on the incidental recharge to the aquifer from the application of water for landscape uses within the provider's service area. All of this allowable groundwater use under the AWS Rules is considered to be consistent with the AMA management goal and while it does not legally "count" as overdraft, it physically represents pumpage that is not replenished. Therefore, for the purposes of the 4MP in the water budgets included in Chapter 3 and Chapter 11 of this plan, the groundwater allowance has not been subtracted out, so that the actual physical impact on the aquifer of groundwater use can be made more accurately.

2. Net natural recharge: Net natural recharge in a given year is the volume of water which naturally recharges the groundwater supply minus the natural depletions to the groundwater supply over the course of that year. The main components of net natural recharge which increase the groundwater supply are stream channel infiltration, mountain front recharge, and groundwater inflow into the AMA. The components which naturally deplete the groundwater supply are groundwater outflow out of the AMA and water loss due to evapotranspiration. Infiltration of treated effluent discharged to surface water channels is not a component of net natural recharge.

3. Incidental recharge: Incidental recharge originates as groundwater or surface water which percolates down to the water table during and after its use for human activity. In the PAMA, the volume of incidental recharge is largely dependent on the volume and efficiency of agricultural water use. It should be noted that incidental recharge that occurs during the use of the water may not be permitted as an underground storage facility under the state's Underground Water Storage, Savings and Replenishment Act (A.R.S. §§ 45-801.01 *et seq).* Water that is treated after its use for municipal purposes, becomes effluent, and is released into a natural streambed, however, is specifically recognized by the Underground Water Storage, Savings and Replenishment Act as eligible to become a managed underground storage activity (A.R.S. §§ 45-801.01 *et seq).* As is more fully explained below, storage credits that are accrued through an effluent discharge that has been permitted as a

managed storage facility cannot be counted as available to users of groundwater other than the water storer.

4. Artificial recharge: Under the state's Underground Water Storage, Savings and Replenishment Act, persons may undertake recharge projects to deliberately add water to an aquifer without the right to withdraw it in the future (A.R.S. §§ 45-801.01 *et seq*). However, artificial recharge is commonly used as a storage mechanism to accrue credits with the expectation of future recovery. Stored water for which credits have been issued cannot be counted to reducing overdraft because it is already allocated to the water storer and is considered a non-groundwater supply when recovered for use. Therefore, this type of water has no net impact on the overdraft volume; however, it does result in a temporary increase in groundwater in storage.

Not all water stored under the Underground Water Storage, Savings and Replenishment Act can be recovered. The volume of recharge that is allocated permanently to the aquifer ("cut to the aquifer"), which results from generation of certain types of recharge credits does benefit the aquifer and is a component of the groundwater supply. In addition, any non-recoverable storage that is conducted in a given year can be included in the volume for that year. Recharge credits that are generated and then subsequently extinguished prior to use are also a component of the supply.

The volume of groundwater that can be withdrawn while preserving future water supplies for non-irrigation uses in the PAMA is not a fixed amount; it will change due to annual variations in incidental, natural, and artificial recharge, as well as other factors listed above. The groundwater system is in a state of "overdraft" as long as groundwater withdrawals exceed the sum of the naturally and incidentally recharged volumes plus the portion of the artificially recharged volume that will not be withdrawn later as storage credits.

Water level change data are a direct indicator groundwater storage changes and one of the factors used in the water demand and supply analysis. Water level changes are expected to continue as stored credits are recovered and entities with DAWS and CAWS utilize their groundwater allowances. However, water management strategies in the PAMA should avoid broad-ranging, significant, and continuing declines in average water levels so as to preserve a sufficient future water supply for non-irrigation uses.

Total Water Use Conservation Requirements and "Stacking"

With the wide array of water resources available in Arizona as an alternative to groundwater, including surface water, reclaimed water, CAP water, and remediated groundwater, ADWR provides incentives to promote use of these alternative supplies whenever and wherever possible. At the same time groundwater is often a very accessible and inexpensive source of supply, whereas the alternative sources can be expensive and difficult to access. ADWR also recognizes that groundwater is our state's "emergency" supply, and it must be available for use whenever the other alternatives run short. Groundwater is particularly valuable as a long-term drought supply to buffer the effect of changes in surface water availability. In order to maximize the supply of groundwater, and ensure sufficient supplies of water, all sources must be utilized efficiently.

For these reasons, ADWR believes that it is both impractical and unwise to consider groundwater use as the only measure of regulatory compliance. The level of groundwater use that is reasonable is relative to the amount of water used from other sources. To ensure that groundwater users make reasonable use of groundwater, and to encourage efficiency and flexibility in the use of alternative supplies, the regulatory strategy evaluates of the total water use of each water user and provider, and sets conservation requirements based upon that total water use. In keeping with ADWR's statutory obligations and limitations, however,

the conservation requirements of the management plan only apply if groundwater is used. ADWR's regulatory program is, therefore, structured around the concept of "stacking" different types of water, by type, in a compliance hierarchy, with groundwater on top. If a total water use conservation requirement is exceeded by a groundwater user, the amount of the violation of that requirement will be measured by the amount of groundwater used in excess of the regulatory requirement. This strategy will ensure that if groundwater is being used, it is being used as wisely and efficiently as economically possible. This system also provides the flexibility needed by most users of commingled supplies, allowing groundwater to be used as needed to supplement alternative sources.

Flexibility in the Components of the Regulatory Plan
ADWR recognizes that water use varies by year and locality. Therefore, ADWR has provided maximum flexibility when administering the regulatory provisions of the management plan. For example, most regulatory provisions include a basic program, with one or more alternative programs designed to meet special circumstances. The basic program is generally designed to place simple numerical limits on water use, leaving the means of achieving those limits wholly up to the water user or provider. The alternative programs tend to remove numerical limits in favor of specific conservation measures more applicable to the water user.

Another component of regulatory flexibility is the establishment of *flexibility accounts* for most allotment-based requirements. These accounts generally allow water users to borrow or bank water from one year to the next in order to overcome the variation in use caused by weather or other unforeseen circumstances. Flexibility accounts are mandated by statute for agricultural users, and ADWR has used this example to incorporate flexibility accounting into municipal programs as well.

Administrative Review and Variance of Conservation Requirements
Even with the general flexibility of the regulatory programs, the Code recognizes that certain individual conservation requirements may pose hardship in certain circumstances. To allow relief in these situations, the Code provides for an administrative review and variance process. The emphasis in this process is on the impact of a particular conservation requirement as it is applied to an individual water user. Administrative review and variance process are fact-intensive inquiries which may result in some regulatory relief and are considered on a case-by-case basis.

Accounting for Water Use
Many water providers deliver a mix of water types. In order to determine compliance with conservation requirements, ADWR must adopt a set of policies for commingled systems. ADWR is continuing to develop policies for "volumetric" accounting.

Generally, a water provider delivering different types of water through a commingled system cannot determine which type of water a customer actually received. Therefore, the provider is generally required to account for all deliveries to its customers on a volumetric basis. This allows the provider to compute the percentage of each type of water delivered in a given year, and apply that same percentage to the water delivered to each customer, regardless of the type of water actually received by the customer. This volumetric accounting policy works well for most providers, because of its simplicity and certainty. Individual circumstances may warrant individual consideration, however, and ADWR is continually reviewing its policies on volumetric accounting to recognize necessary exceptions.

Enforcement
An effective conservation plan requires effective enforcement. ADWR is given wide ranging enforcement

authority in the statutes to ensure that all water users are contributing their share to the overall goal of groundwater conservation and augmentation of water supplies. While the statutes allow the imposition of substantial monetary penalties for violating either water use limitations or conservation requirements, ADWR is also given considerable discretion in how that enforcement program will be managed. Overall, ADWR's philosophy has been that the ability to correct management deficiencies and save groundwater is more important than collecting monetary penalties. Therefore, most of ADWR's regulatory efforts to date have involved voluntary *consent orders* where the water user in violation agrees to adopt conservation measures, guarantee future compliance, or otherwise mitigate the impact of the violation on the state's groundwater resources in exchange for a waiver or reduction of the civil penalties. This approach has worked well in the past, and has been particularly useful in making the transition from a state where groundwater use was essentially unregulated to a state where water regulation has become a fact of everyday life.

In the fourth management period, ADWR will continue its policy of reviewing each suspected violation on an individual basis. ADWR will also continue its policy of working with any water user in violation of the groundwater laws to make certain that all the surrounding circumstances are understood and to explore alternative means by which the problem might be solved. In some cases, however, violations are not matters of inadvertence or misunderstanding, but are repeat offenses or voluntary decisions based on various circumstances. During the fourth management period, ADWR will strive to identify more frequent types of violations and may pursue more stringent corrective actions on the part of the violator to address the issue, including the expenditure of funds to implement additional proven water conservation measures. By so doing, ADWR intends to bring greater equity and fairness to the common goal of saving our groundwater supply. Alternative mechanisms to achieve compliance while encouraging achievement of local water management goals will also be explored.

The foregoing synopsis of ADWR's regulatory approach is intended to assist the reader in understanding the reasons behind the mandatory conservation requirements in the 4MP regulatory chapters. This chapter explains many of the administrative policies and procedures contained within the management plan. Finally, it is ADWR's policy to offer assistance to anyone seeking to better understand or comply with the conservation requirements imposed by the management plans, or the requirements of the Groundwater Code. ADWR staff can provide valuable support on most water management challenges.